DOCUMENT RESUME

ED 257 057 CS 208 827

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TITLE Transfer of Writing Skills: How the Concept of Transfer Can Help Teachers of ESL and Basic Writing.
PUB DATE Mar 85
NOTE 11p.; Paper presented at the Annual Meeting of the Conference on College Composition and Communication (36th, Minneapolis, MN, March 21-23, 1985).
PUB TYPE Viewpoints (120) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Basic Skills; Cognitive Ability; *Cognitive Processes; *English (Second Language); Higher Education; Problem Solving; Second Language Instruction; *Second Language Learning; *Transfer of Training; Writing Instruction

ABSTRACT

The concept of transfer, which refers to the brain's ability to generalize or situations in which perceptions and behaviors are generalizable, can be of use to teachers of English as a second language (ESL) students and basic writers. What is called "writing across the curriculum" and most classroom writing instruction are based on unexamined assumptions that the skills being taught will transfer, but writing skills are not just a matter of lateral transfer. The ability to produce written-language higher-level linguistic forms and rhetorical structures is a prerequisite to higher level problem solving. Thus, writing instruction must be seen as teaching for both lateral and vertical transfer. For vertical transfer, writing must be performed as a situational activity. Writing assignments for ESL and basic writing students must be "student centered," must have a concrete audience, and must take into consideration the students' prior learning. The goal of increasing students' proficiency in the vertical transfer of skills cannot be accomplished using exercises that stress competence in isolated mechanical skills or unrealistic rhetorical forms at the expense of communicative intentions. (HTH)

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Transfer of Writing Skills: How the Concept of Transfer Can Help Teachers of ESL and Basic Writing

The concept of transfer can be of direct use to those of us concerned with language acquisition and writing, especially teachers of ESL students and basic writers. Transfer is at the core of all learning and thinking, even survival of creatures. But, perhaps because of its pervasiveness, it is a concept used frequently in an unexamined fashion.

Let's think of transfer as referring to the brain's ability to generalize, or to situations in which perceptions and behaviors are generalizable. Clearly, transfer is necessary for any learning to take place. If the brain could not generalize, every input stimulus would be treated as novel, unique. We would go insane from overload, like a caged specimen victimized by some giant empiricist's experimentation. Thus, the brain cannot work like a 100% empiricist. It must have categories, or classification patterns, or modes of organization for recognizing, processing, and transmitting information. This assumption has been around for centuries. Current knowledge on this subject is a fascinating compendium of such areas of inquiry as molecular biology, neuro-science, artificial intelligence, and linguistics. [On my handout (Appendix 1), I include just a few recent references.]

But in my brief time, let us focus primarily on our pedagogy. Take, for example, James Britton's hypothesis -- that expressive writing is the "matrix" out of which the more public modes (which he calls "transactional" and "poetic") arise. Teaching expressive

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writing to build fluency for the other modes is based on an assumption of transfer which is not necessarily self-evident. In fact, what is called "writing across the curriculum" and most classroom writing instruction are based on unexamined assumptions that the skills being taught will transfer.

Transfer, ultimately, is the goal for both higher-level analytical learning, and training for lower-level skills and routine tasks (such as: spelling, typing with 10 fingers, riding a bike). Specific mechanical tasks are usually easily generalizable: typing on different keyboards; driving different models of American passenger cars (I will probably be correct in reaching for the knob at the furthest left to turn on the lights).

The ways of thinking about transfer and the vocabulary used to talk about it, however, as in any complex subject area, are often confusing and contradictory. Let me summarize briefly what some cognitive psychologists and those who apply their principles in educational psychology have to say about transfer. [See handout, Appendix 1]

1. Jerome Bruner, in The Process of Education (1960), distinguished between "specific" and "non-specific" types of transfer, but "non-specific" is not a good descriptive label for higher-level learning, which is both abstract and complex.

2. Robert Gagné, a pioneer of transfer study, in The Conditions of Learning (1965), distinguished more effectively between "lateral" and "vertical," transfer, which is graphic and has neutral connotations.

3. Next, a text (from which I quote at length) shows Gagné's influence in elucidating his distinction. But relegating writing

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proficiency to lateral transfer seems to me wrong: oversimplified and misleading. Obviously, these educational psychologists have a stereotypical notion of teaching English.

> 'Lateral transfer. When a learned capability is performed appropriately in a new and different situation of approximately the same level of complexity as that of the original learning, the effect is said to be one of 'lateral transfer.' For example, students . . . in an English class practice writing in grammatical, clear prose and later can transfer this capability to other situations outside the English class.
>
> "Vertical transfer. When a learned capability at one level facilitates the learning of a capability at the next higher level, the influence is called 'vertical transfer.' . . . Gagné and his associates suggest that vertical transfer occurs when the lower-level skill is critically incorporated in performance of the higher-level skill. . . . Gagné (1977) names the lower-level skill a specific prerequisite of the higher-level skill." [Nelson F. DuBois, George F. Alverson, Richard K. Staley, Educational Psychology and Instructional Decisions (Homewood, IL: Dorsey, 1979), pp. 214-17.]

Writing skills are not just a matter of lateral transfer. Perhaps elements on the lexical level (vocabulary and spelling) and on the grammatical level (sentence mechanics) may be laterally transferred. Perhaps also the use of empty forms and structural patterns may be laterally transferred: the five-paragraph essay format, parallel construction. But I would argue that at the level of syntax and certainly with rhetorical structures that reflect choices of ways of organizing experience and thinking in a discipline, these are not in

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the dimension of lateral transfer.

The ability to produce in written language higher-level linguistic forms and rhetorical structures is a "prerequisite" (in Gagné's terms) to higher-level problem solving. This is what he means by vertical transfer. For much critical thinking, language and writing skills must be engaged, and they become a determining factor in how well a problem is defined and what solutions, if any, are presented. Thus, writing instruction must be seen as teaching for both lateral and vertical transfer.

What implications for our teaching pedagogy are there in this notion of vertical transfer? If writing instruction is not just teaching lateral transfer of mechanical skills, then it must follow that to teach for vertical transfer, writing must be performed as a situational activity. That is, the vertical dimension of writing is situational; it is a function of the context and the content of a specific situation.

Let me elucidate "situational." The conditions of a specific, real-world thinking and writing situation are a function of the writer's intent in relation to the subject matter within the specific rhetorical context. For example, if I want to write a grant to get money for the Oregon Writing Project, I will not get very far unless I produce a concrete proposal for a specific audience. If I start with XX Foundation, I will then define a precise purpose of arguing why a grant for my cause fits the goals and activities of XX Foundation.

The conditions of a real-world writing situation are not usually a function of formal or structural elements of arrangement, which are the materials of lateral transfer. Unfortunately, these may be the conditions of classroom, artificial writing situations: assigning

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forms, paterns, models. Nobody in the real world is asked to write a comparison-contrast paper, or a process paper; rather, one may be asked or ask one's self: should we buy an Apple or an IBM? And how does the disk drive work?

Thus, the kind of assignments that we give to students (especially, basic writers, ESL, and older-than-average students) should be "student centered" -- designed to lead to personally meaningful writing. (Mina Shaughnessy recognized this over 10 years ago.) Individuals are committed to their writing if they feel that it will make a difference in the actual world, or add to the knowledge they need to make decisions of their own.

Indeed the situational asumptions of pragmatics lie behind progressive teaching of second languages or dialects. Instead of only memorizing rules or forms, students are suffused in real-world contexts or situational uses of the language. H. G. Widdowson, in Teaching Language as Communication (Oxford, 1978), pp. 17-19, urges a pedagogy which maximizes "transfer from the learner's own experience of language." Widdowson expresses the current view that distinguishes the limited "knowledge of usage" (which is about rules and explanations) from the broader "knowledge of use" (which is directly performative in real-world situations).

This distinction in language acquisition is supported by our current understanding of brain functioning. Long-term memory is separated into "declarative" and "procedural" operations, a dynamic interrelation of "conscious" and "automatic" cognitive processes. The procedural long-term memory is unconscious: providing automatic, motor and problem-solving skill sequences. The declarative long-term memory is explicit and analytical: consciously examining data by such means

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as logic and visualization. In brief, declarative is "knowing about" and procedural is "knowing how to." Here's an excellent example of the difference. Try to fill in a blank chart of the typewriter keyboard, as opposed to typing the alphabet using 10 fingers and not looking. Even experienced typists filling out the chart might feel their fingers rehearsing the positions. Procedural memory is being relied upon, just as it would be if one rides a bike again after an interval of months or years.

I would hypothesize that the readers and writers whom we judge as more successful and insightful have acquired a greater amount of vertically transferred knowledge in both declarative and procedural memory than have less successful readers and writers. The less successful may be limited more to lateral transfer. Current research, like Linda Flower's reader protocols to determine reading strategies, should tell us more about this. In addition, Catherine Keech (in a study reported at AERA, 1982), identified different characteristics of the discourse strategies of narrating, describing, and commenting. She noted that "two kinds of development are involved as a writer masters these text-design strategies": "acquisition" and "progression from novice to expert" (p. 16). Obviously, more than lateral transfer is needed for such achievements.

One way to highlight the difference between the lateral and vertical dimensions is to consider those with learning disabilities. They often have difficulty even coping at the lateral level. A special education research grant at the University of Oregon is trying to develop basic rules to teach generalizing skills to the severely handicapped. These are people who can be taught to cross the street at one place, but cannot transfer this and become confused at a

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different intersection.

Let me offer a final example. If we consider the linguistic problem of error analysis, the lateral/vertical transfer concept can help us articulate that what sometimes are mistakenly seen as failures of lateral transfer (of "grammatical, clear prose") are actually inadequacies of thought or understanding regarding the subject matter. Thus, these writing problems lie in the dimension of vertical transfer and are situational.

As teachers of ESL and basic writers, you are certainly aware that aparent surface errors may signify deeper problems with the specific content or context. Some writing problems really represent thinking problems with the specific idea to be communicated. Thus, the diagnosis and correcting of surface errors in one text do not necessarily produce positive transfer in other contexts to prevent similar writing problems.

I would suggest that basic writing teachers and researchers, who study the classification of error, may be aided here by the lateral/vertical transfer concept. For example, consider Valerie Krishna's "The Syntax of Error," in the first issue of the Journal of Basic Writing (1975). She illustrates problems of defining and then attempting to correct certain structural errors which are unconventional and unpredictable. Her solution is not to dwell on what is unidiomatic or incoherent, but to ask the writer "what do you want to say?" Usually the person will use critical thinking skills to reconceptualize the idea and rephrase it more clearly and correctly. The solution lies in the vertical, not the lateral, dimension.

Moreover, what might be perceived as a surface error may well be a mistaken rational coping strategy for a learning-disabled student. A

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special education teacher informed me about a high school LD writer who capitalized Bs and Ds in the middle of sentences to avoid errors of confusing lowercase b's and d's. This situation is not one of a simple surface error, but one of a rational response (to avoid confusing letters) creating an error which enters procedural long-term memory.

In conclusion, I believe that there are useful implications for our teaching from the lateral/vertical transfer concept. Vertical transfer confirms that writing instruction should be situational. It should foster practical rhetorical assignments: engaging the writer's intent to communicate with a real audience for a specific purpose which has personal meaning. This "student-centered" writing should be measured by its effectiveness in communicating in the compostion as a whole.

Getting our students to increase their proficiency in the vertical transfer of writing skills is what our goal should be for writing instruction. But we cannot expect to produce vertical transfer if we teach exercises which stress competence in isolated mechanical skills or empty forms (like the five-paragraph essay) and other structural patterns (like the infamous modes and types according to which most composition texts are organized) at the expense of communicative intentions.

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Appendix 1

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1985 CCCC
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1. Jerome Bruner, The Process of Education, New York: Vintage, 1960

Specific transfer -- usually applies to training of skills

Nonspecific transfer -- "transfer of principles and attitudes"--
general ideas, mastery of principles
for creative problem solving

2. Robert Gagné, The Conditions of Learning, HRW, 1965, 1970, 1977.
distinguishes between LATERAL and VERTICAL transfer.

3. From a recent ed. psych. text (1979):

Lateral transfer. When a learned capability is performed appropriately in a new and different situation of approximately the same level of complexity as that of the original learning, the effect is said to be one of "lateral transfer."

For example . . . students in an English class practice writing in grammatical, clear prose-and later can transfer this capability to other situations outside the English class.

An important form of lateral transfer is learning to learn.

Vertical transfer. When a learned capability at one level facilitates the learning of a capability at the next higher level, the influence is called "vertical transfer."

Gagné and his associates suggest that vertical transfer occurs when the lower-level skill is critically incorporated in the performance of the higher-level skill . . . . Gagné (3d ed 1977) names the lower-level skill a specific prerequisite of the higher-level skill.

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From: Implications of Research on Transfer

Robert F. Biehler, Psychology Applied to Teaching, 3d. ed., Houghton Mifflin, 1978.

1. Maximize transfer by:
   - 1.1 Similarity between training and testing
   - 1.2 Adequate practice with a variety of examples (+ transfer is function of practice)
   - 1.3 Understanding general rules or principles of task to be applied in solving new problems

2. Distinguish between specific transfer of skills and general transfer of principles.

3. However, just because students understand principles, they do not automatically use them.

4. Therefore, teach heuristics -- systematic techniques of problem solving or methods of inquiry
   - 4.1 Encourage the generation of many ideas -- brainstorming
   - 4.2 Allow incubation period
   - 4.3 Frame hypothesis and test (develop alternative hypothesis if needed)
   - 4.4 Encourage and assist students in applying principles to a variety of situations

A Few Recent References to Brain Studies

Anderson, John R. The Architecture of Cognition (Harvard, 1983) [a major theoretical work]

The Brain: A Scientific American Book (New York, 1980)

Ornstein, Robert and R. F. Thompson. The Amazing Brain (New York, 1984) [an excellent introduction]

Restak, Richard, MD. The Brain (Bantam, 1984)

Rosenfield, Israel. "The New Brain." New York Review of Books, 32 (March 18, 1985) 34-38; forthcoming: Brain for Beginners

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